

The Mining Journal

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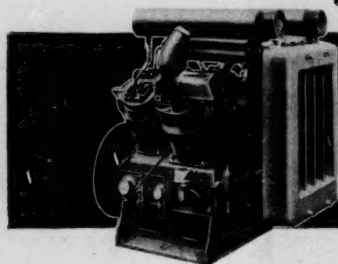
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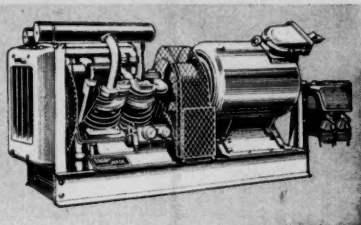
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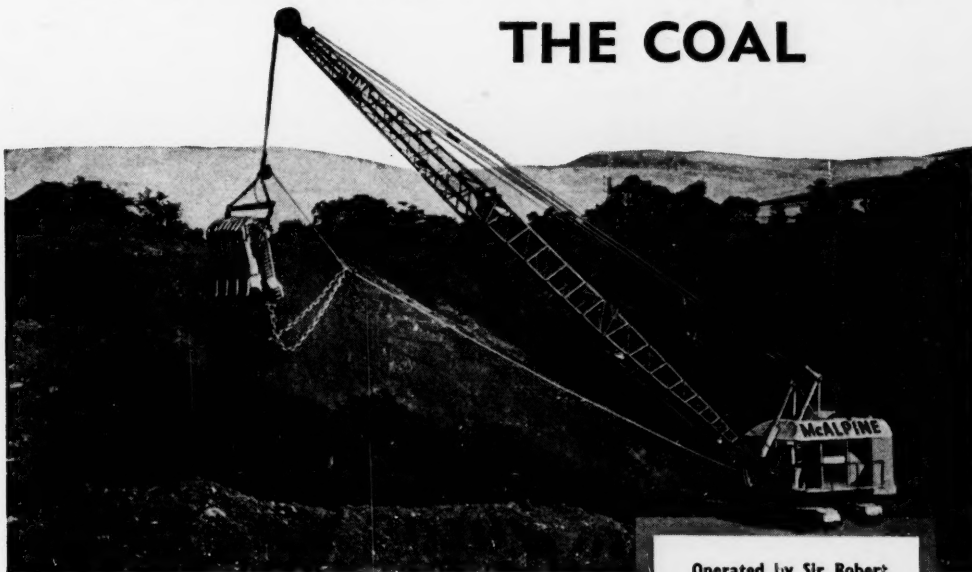
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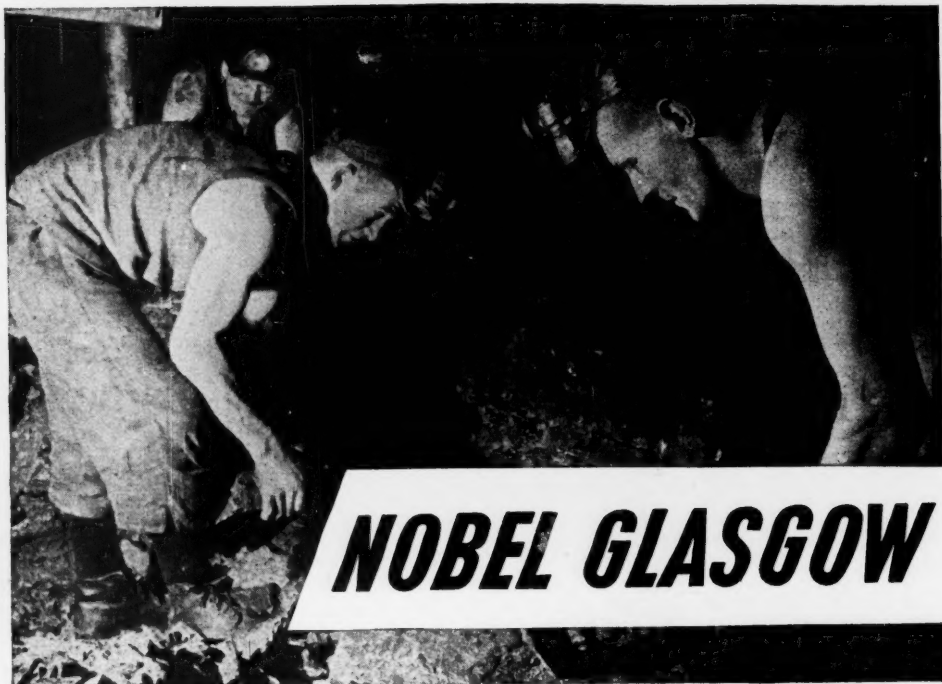
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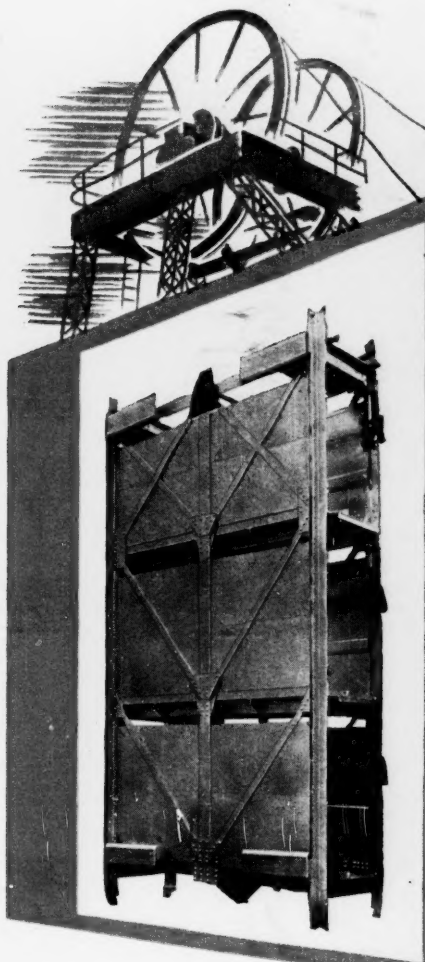
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THIS WEEK'S FEATURES

RE-TREATMENT OF METALLIC WASTES:
ESPECIALLY ZINC RESIDUES - Page 56
THE PHOSPHATE ROCK
INDUSTRY - - - Page 57

NOTES AND COMMENTS

Premium Sales Control Free Gold Price

It wasn't very long ago that we were busy explaining away the fall in the price of gold on the world's free markets and the sympathetic movement exhibited in the Kaffir market. At that time it was argued that the effective domination of China by the Communists plugged most of the holes through which gold was flowing into private hoards in the Far East. Subsequently, this resulted in the flow of gold being reversed as considerable quantities of gold began to flow out from private Chinese gold hoards and this movement, together with the appearance of the Chinese Nationalist Government on the world market as a seller, depressed the price and gold trading operations slowed down to a standstill. However, the Korean war revived demand for the yellow metal, but this time gold did not follow its previous and more customary course to the Far East.

From the beginning of the Korean War to the end of last year there have been a number of factors which, if not important in themselves, have by their combined weight brought investors to seriously consider once more the prospects of the gold share market.

The most important of these operating in favour of renewed investment has been the steep rise in the percentage of newly mined gold in the Union being sold at premium prices for industrial, professional and artistic purposes. To October, 1950, figures released by the Rand Refinery reveal that gold to the value of some £30,000,000, or a fifth of the Union's total production, was disposed of on a premium basis. But it is now believed that this figure has been considerably improved upon and that premium sales are currently running as high as 40 per cent or more of the Union's entire production. The premium is not thought to be high, although estimates vary between 2½ and \$8 per ounce. The importance of this additional income, especially to low-grade mines, is not inconsiderable, and if premium sales are sustained for any length of time a marked effect on the mines' profit will result. In the short run the extra revenue will make an effective counterweight to the rising costs of labour and supplies. In this connection, it is of interest to speculate on the heights to which the free market price of gold would soar if the Union authorities stopped even for a month the sale of gold for these purposes.

When the International Monetary Fund refused to concur in the Union's plea for a higher gold price last May, the subsequent premium sales agreement with that organization enabled South Africa, in fact, to enjoy a

small rise in price for the metal. But given the present high demand for gold and the fact that the Union is by far the greatest source from which these demands can be met, South Africa does, in effect, control the price of gold on the free markets, and by her willingness to make available gold in almost unlimited quantities for specified purposes, the international free price for gold has been kept down to a modest premium.

One of the chief beneficiaries under this scheme would appear to be the Swiss bullion dealers who, after purchasing gold in South Africa ostensibly for the fabrication of watches and similar types of goods, fashion the metal into wire sticks—to comply with export regulations—and then re-export them to the free market centres throughout the world.

The secondary sources of importance are the Belgian Congo, where in July last the quota of the producers' output allowed to be sold at premium prices was raised from 40 to 60 per cent, and South America, although stories are not lacking that Russia and her satellites are also supplying the market.

The renewed activity in the free gold markets throughout the world has not been missed by the investor, and it has strengthened his feeling that the price of gold must soon be adjusted upwards to give it a more "realistic price." There is, of course, an appreciable time-lag between the disposal of the gold by the Union authorities and the arrival of the consignment to its particular destination, for the regulations concerning the import and export of gold vary enormously from one country to another. Nevertheless, where there's a will, there's a way, and it appears that there has been an effective, if circuitous, route built up by which gold moves from South Africa to its final market.

The quarterly reports of the Anglo American Corporation Group for the period ending December 31, 1950, released earlier this week, show that premium sales, which were running at not more than 30 per cent of the Union's output during this period has meant a percentage increase on the normal earnings of the companies, ranging between five per cent for Daggafontein (£69,064) to 17 per cent in the case of Springs, or £25,187.

Although it is not known for how long these premium sales will continue to provide an additional revenue to the mines, the premium price obtained will be watched with interest, for it is as good a guide as any now available to the possible price of gold in the future.

Tin—Too Much or too Little?

"The most urgent problem before the tin industry is that of under-production, not over-production." This view, familiar enough to readers of the *Mining Journal*, if not to others, was expressed by Mr. G. W. Simms to shareholders at last week's adjourned meetings of Sungei Besi Mines and Ayer Hitam Tin Dredging. It marked the conclusion of a penetrating analysis of the statistical position of tin and of a rebuttal both of the estimates of the International Tin Study Group, and of the proposals for continued restrictions to which they gave rise last year.

In these columns we have repeatedly insisted that the need for any artificial restriction of output in the foreseeable future appeared so remote as to make unnecessary, at this time, the re-introduction of the paraphernalia of international control. As events turned out, the United Nations' conference failed to reach any agreement for a control scheme, so that for the moment the issue is perhaps no longer the vital one which it appeared to be three months ago. Nevertheless, for the sake of the record, if and when the tin restrictions return to the assault, it is important to emphasize some of the points made by Mr. Simms in his speech.

Tin restriction has been presented by the British Government and others as essential to security of employment among native miners in Malaya, and consequently as an essential bulwark against Communist infiltration. This argument, Mr. Simms points out, is in direct conflict with experience gained from pre-war restriction. He claims that Malaya is probably the world's lowest cost producer, and in a buyers' market can be expected to more than hold her own.

In 1930, the year immediately preceding the introduction of restriction, Malaya produced 66,894 tons (37.5 per cent of the world's production). In 1938, under the quota, she was only permitted a production of 43,375 tons (26.29 per cent of a considerably reduced world production), whereas under conditions of free competition, there seems no reason to doubt that she would at least have retained her proportion of the reduced output, which based on 1930 percentages, would have assured Malaya of a production of over 60,000 tons. "Under any scheme of restriction it is mathematically certain," says Mr. Simms, "that the percentage of world production which Malaya would be permitted to produce must be lower than her percentage production without restriction, and consequently the number of workers employed in the industry must also be lower."

It is important to be clear as to precisely what is implied by that stability in the tin industry at which restriction is said to aim. In the long run rate of consumption must determine rate of production, and both must be dependent on the general level of industrial activity throughout the world. Under conditions of fluctuating demand, stable price and stable production are, as Mr. Simms points, mutually incompatible, and "if restriction is imposed with the object of securing price stability, it defeats that object as far as the producer is concerned, for as production is restricted costs of production increase, which is equivalent to a reduction of price. It follows, therefore, that under restriction there can be no such thing as a reasonable, stable economic price which is fair both to producer and consumer, for compulsory restriction aims at keeping uneconomic production alive by restricting economic production."

Aside from the conclusions to be drawn from the experience gained under pre-war restriction, the case for control to-day must clearly depend in the main on the estimates of production and consumption during the next

few years, upon which the need for a restriction agreement has been based. The International Tin Study Group's forecast of production, upon which the case for control has been based, and which was put forward last March for a three-year period, was as follows:

Year	Production (tons)	Consumption (tons)	Surplus (tons)
1950	172,000	127,000	45,000
1951	191,000	136,000	55,000
1952	199,000	140,000	59,000

To what extent do these estimates now seem likely to be realized?

As regards Malayan production, there is no doubt that the rate of increase is now small. Figures for 1948, 1949 and 1950 respectively were 44,815 tons, 54,910 tons and (approximately) 58,000 tons, while output for 1951 is forecast by Mr. Simms at 62,000 tons. Nor is this surprising in view of the long period over which prospecting for new deposits has failed to keep pace with production. Prospecting was thus continued during the era of restriction. Then followed the war and Japanese occupation, and since then the persistence of banditry has rendered prospecting too hazardous a venture. Similar considerations apply to Indonesia where on balance there has been no perceptible increase over the past three years. Bolivian production figures are markedly on the downtrend being in 1948, 37,336 tons; in 1949, 34,117 tons; and in 1950, approximately 30,000 tons. In no other country is production markedly on the increase, and it is probable that final figures of world output for 1950 will prove to have been between 163,000 and 164,000 tons, as compared with 161,800 tons in 1949. On the evidence of these figures, which are occurring at a time of abnormally high prices, the Tin Study Group's estimates of production for 1950-1952 do not appear very convincing.

As regards consumption, prospects in the United States are, of course, the dominant consideration. Here the figures for the first three-quarters of 1950 have been steadily rising, being 15,490 tons, 18,048 tons and approximately 21,000 tons for the first, second and third quarters respectively, and it seems reasonable to anticipate that the total consumption for the year will not fall short of 75,000 tons compared with 59,863 tons in 1948 and 50,120 tons in 1949. Trends in the U.K., Canada and Germany are also tending upwards and on the basis of the latest exceeded 150,000 tons.

Over the year production thus seems likely to have exceeded consumption by about 10,000 tons (compared with the Tin Study Group's estimated surplus of 45,000 tons), although most of this excess occurred in the early months of the year and latterly consumption has been keeping pace with, if not actually exceeding, output.

As regards 1951, U.S. consumption is estimated by Mr. Simms to be now running at a rate of 90,000 per annum, while he sees no prospect of Malayan production exceeding last year's figure by more than about 4,000 tons and he concludes that current world consumption is substantially in excess of production.

It remains to be seen, of course, to what extent the Bolivian Government's foreign exchange concessions may stimulate output in that country, while in the Congo it has been suggested that the E.C.A. grant to the Géomines for development may result in an increase of 6,000 tons over the next two years. In any event, it seems improbable that world mine production in 1951 can exceed 170,000 published figures world consumption in 1950 must have

Malayan ore reserves in sight are to-day estimated, and at this figure excess of production over consumption promises to be less than last year, and may even disappear.

perhaps a little pessimistically, at 11 years' production, and the Malayan Government appears at last to be awakening to the gravity of this position as witness their recent agreement to sponsor a survey of the country's tin-ore deposits following on the proposals in the "Draft Development Plan for the Federation of Malaya" in which it was suggested that the Mines Department should itself carry out an investigation into the general problems of tin mining with the object of giving "much needed advice to tin mining undertakings."

While it is welcome news that the Government should now be actively concerning itself with the future of the Federation's tin industry, it is open to question whether the best results will follow from increased direct Government participation in prospecting and research into mining methods rather than through the facilitation of this work by the companies themselves by such financial and legislative action as may be necessary and, still more, of course, by bringing the present era of banditry as rapidly as possible to an end and ensuring the maintenance of stable conditions essential to the future of the industry, no less than of the Federation as a whole.

The Story of the O.F.S. in Pictures

At the library of the Central Hall, Westminster, the public has been able this week to see for itself through an impressive exhibition of photographs, the developments which are taking place in the Orange Free State gold fields. This exhibition is more than a pictorial review of how a mining industry comes into being. It also foreshadows a new way of life for the South African native mine worker.

The purpose of the exhibition is to afford those people in Britain who are financially interested in the various gold mining companies of the O.F.S. an opportunity of gaining a clearer impression of the scope of the new mining enterprise. In this regard the sponsors have succeeded admirably. A colour photograph shows the remaining half of the core obtained from the phenomenal borehole Geduld No. 1, which yielded gold assaying 1,252 dwt. over 18.4 in. or 23,037 in.-dwt. Naturally, shaft sinking operations are conspicuously displayed but the illustrations also tell in progressive steps the story of bringing a new mine through its development stages.

This exhibition brings out particularly clearly the very progressive approach which is being brought in the O.F.S. to the provision of housing and other social amenities for the South African miner, both European and African, concentrated in and around the model town of Welkom. In 1947 Welkom was but a barren, dreary stretch of open veld, while today there are nearly 1,200 houses in four different suburbs ranged round a spacious civic centre. While some imagination is needed to visualize the Welkom of the future, as the planners have designed it, the sponsors of the exhibition, the Anglo American Corporation group, have brought that vision within focus by showing side by side pictures of Welkom as it is today and photographic reproductions of perspectives painted by one of the architects of the Corporation's staff, which show what the ultimate appearance will be of the civic centre layouts now under construction.

While the pictures tell something of the story of general development in the new goldfield, the photographs relate specifically to those mines in the O.F.S. under the aegis of the Anglo American Corporation. Appropriately enough the exhibition includes a photograph of Sir Ernest Oppenheimer cutting the first sod of the first shaft put down by the Anglo American Corporation in the O.F.S. This is a symbolism, for to him must go the credit for much of what is so clearly admirable in the concept of this new mid-century goldfield.

Australia

(From Our Own Correspondent)

Melbourne, December 30.

The Electrolytic Zinc Co. of Australasia Ltd., which produces zinc metal from Broken Hill zinc concentrate and from its own ores won at the Rosebery and Williamsford mines, on the west coast of the island, earned a net profit of £A1,299,841 in the year ended June 30, 1950. Costs rose, but were offset by increased output, and the very high level of world prices during the period. Sales of zinc for use in Australia approximated 52 per cent of the tonnage produced. This had to be sold at the local fixed price of £A40 per ton, although the price in Britain was £188 15s., and in the United States, £175 per ton. Price control in Australia therefore, meant that the zinc industry had subsidized local consumers by £A2,400,000 during the year. Production of zinc at the works at Risdon was 83,897 tons, the highest recorded. This record was achieved by improved metallurgical efficiency. The company has planned a programme of projects which will be spread over several years, and will involve a cost of some £A4,000,000.

IMPROVED POSITION OF MOUNT LYLE

Improved supply of coke, and better conditions generally, helped to improve the position of Mount Lyell in the year ended September 30, 1950. There was no improvement in the fixed price for copper until the end of the term, when this was raised to £A215 per ton; since the end of the financial year, there has been a further rise to £230 per ton. Ore mined and treated was 1,516,832 tons, assay value of the ore won being Cu. 0.635 per cent. The total quantity of material broken in all mines was 2,242,651 tons, an increase of 228,166 tons on the previous year's record figure. Improvement is due to advances in open cut practice despite a decrease in the average number of men employed at the West Lyell open cut. There was also a decrease in the men employed underground, but this was offset by the introduction of mechanical loaders. Churn drilling is being used successfully in open cut mining, and a second machine is on order. The first of the 4½ cu. yd. shovels ordered has reached Hobart, and the open cut plant has been increased by six 20-ton capacity motor trucks. Ore reserves, both open cut and underground, total 31,685,000 tons with an average assay value of Cu. 0.73 per cent, Ag. 0.05 oz., Au. 0.0084 oz. The concentrating plant treated 1,518,832 tons of ore for the production of 32,469 tons of concentrate assaying Cu. 24.46 per cent, containing 7,703 tons of recoverable copper. In the term the smelter produced 8,009 tons copper, 27,851 oz. silver and 5,326 oz. gold. Search for new ore bodies is part of the company's policy. Diamond drill bores put down on an area geophysically surveyed have not disclosed ore but have given important geological information; a deep borehole was in progress at the end of the year.

King Island Scheelite (1947) Ltd. reported a profit of £A190,000 for the year ended October 31, compared with £A63,764 in the previous year. A dividend of 1s. per share is now payable, and will require £A100,000; balance of the profit will be allocated to new construction and development. Ore treated amounted to 160,167 tons from which 777 tons of scheelite concentrate were recovered, valued at £A434,000. In the first half of the year operations were severely curtailed by shortage of water under exceptional drought conditions; this, and low price for tungsten, reduced profit to a low level; in the second half of the year, water supply allowed milling to proceed satisfactorily, and the high price for tungsten has placed the company's finances in a very satisfactory position.

Re-treatment of Metallic Wastes: especially Zinc Residues

By C. C. DOWNIE

The existing high market price for zinc has aroused no small interest in reviving methods for recovery of the metal which in normal times would not merely have been regarded as uneconomical, but more accurately as extravagant. Should the same extremes of prices be maintained for any appreciable length of time for other non-ferrous metals, there is no saying how many rejected processes may be reconsidered. A reference to the section on comparison of metal prices in "Metal Statistics" will reveal how the market figures collapsed during the five-year depression period, 1930-1934.

With zinc and lead about £10 per ton, and copper at £30 per ton, some of the metallurgical firms concerned considered it scarcely worth while continuing their activities. To-day, the reverse is the case, and residues which were regarded as waste are being scrutinized to see what can be done in the way of possible reclamation, to meet the ever-increasing demand. Not only this, but some of the actual waste-recovery systems left behind residual material, which, under existing conditions, might be worth retreatment. For example, the method of re-smelting foul tin slags containing 2½ per cent tin left behind hundreds of tons of slags which still retained ½ per cent of tin, which metal to-day has reached the phenomenal price of £1,000 per ton. Other changes have to be contemplated in view of the upward tendency in prices.

The argument in favour of direct smelting is that the work is carried out within small space for a large tonnage, with minimum labour, and greatest speed of output. Wet extraction methods and electrolytic systems require large working space, preferably on sloping ground, for a relatively small tonnage, more labour and much slower output. The products from the latter are purer, and what is more important, usually make recovery down to the last few points per cent. What might be regarded as the haphazard methods of zinc and lead smelting, both of which left behind appreciable amounts of slags and slagged material, besides unrecovered fume, have to be made allowance for, in view of their small monetary value in earlier times.

SOME ZINC WASTE PROCESSES APPLIED

Zinc waste materials abound in a number of forms, apart from scrap, cuttings, and galvanized iron, all of which have been the subject of reclamation systems. The tailings from galena frequently contain varying proportions of blende, which, because of the difficulty of separation from the associated fluorspar, are dispensed with, and sometimes used-up for road-making schemes. Pure zinc sulphide has a specific gravity of 4, while pure calcium fluoride is 3.2, but the impurities present frequently make them so close that concentration methods are considered not worth while.

One proposed method, tried out on the small scale for some time, comprised melting the material in closed furnaces and obtaining the zinc in the form of a fused block of zinc oxide for dispatching to the regular zinc smelters. In other directions, the zinc slags collected from the zinc smelteries were for some time dispatched to the wet copper extraction works, where the hot acid liquors were allowed to play over them and ultimately dissolve out the zinc. As galvanized iron was used for precipitating the copper, this amplified the zinc content in the resulting waste liquors and made it more economical to recover zinc; details of such methods have appeared

elsewhere. Another unique process worked in the Glasgow area for some time consisted of heating various collected scrap, alloys, turnings, and other zinc-bearing materials, in a specially constructed hearth in complete absence of air, whereby the zinc was caused to collect on the surface as a white fluff for removal as zinc oxide.

A further system, where no furnace of the kind was available, comprised melting and burning zinc-bearing alloys in a strong draught of air and collecting the resulting fume in a modified form of bag-collecting arrangement. The latter was a compact cylindrical device equipped with several hundreds of "stockings" of selected filter-cloth, and one line only of which received the fumes at a time. As the process progressed, the cylinder was automatically turned to bring a fresh line of "stockings" into position, while those which were filled were tapped to remove the oxides, and in this way the compact collector could do the work of a large bag-house. Whereas work of the kind is somewhat limited in this country, the same cannot be said of the U.S.A. where lithopone factories make arrangements with various smelteries to acquire such oxides for dissolving in sulphuric acid to make zinc sulphate, and return the residues consisting of lead, antimony and tin oxides, for reduction and electro-refining. Not a few of the wet electrolytic, electro-thermal, and chlorination methods described in detail in published metallurgical works, relate to treatment of regular supplies, and are not necessarily suitable to economical handling of promiscuous lots of zinc residues and waste materials.

DIFFERENT FUMING METHODS

It transpires that fuming installations have been developed recently in the U.S.A., a short account of which appears in a recent issue of *The Colorado Mining Record*. In one plant in Kellogg, Idaho, this system is claimed to recover from 40 to 45 tons of zinc, besides smaller amounts of lead from approximately 400 tons of slag daily. It is also pointed out that in a further plant at present in the course of erection, there is an accumulation of 800,000 tons of residues containing some 26 per cent zinc, and which is the property of the Hudson Bay Mining and Smelting Company. Briefly, the process as described by D. V. Sherman, comprises boiling or fuming a furnace load of molten slag, whereby the vapours emitted are cooled and collected as fume for further treatment. This appears to fall in line with methods already applied and abandoned in this country, although no doubt these have been benefited by improved devices, etc. For example, one method of the kind consisted of fusing zinc-bearing slag material in a hearth with a set of tuyeres in a sense resembling a converter, but otherwise represented by a coal-fired reverberatory.

Thinning agents were added in the form of 5 per cent of lime and 5 per cent of powdered glass, and the percentages could be re-arranged to accord the desired fluidity, following laboratory analysis. (This differs entirely from methods which depend upon the mass remaining in powder condition during distillation, as is done with molybdenum materials, where any actual fusion or addition of thinning agents, etc., would only retard volatilization.) An alternative method is to add 10 per cent china clay and 4 per cent lime, depending here mainly on a higher iron content. With refractory material which shows little tendency to fuse, raising to a white heat in presence of carbon will suffice to dispel the

zinc. To do this properly, it is necessary to use about 20 per cent charcoal, and following heating, to roast the mass, since small particles of metallic zinc tend to cling to the carbon. The fuming process differs in that all and sundry materials, whether refractory or otherwise, are rendered fusible, and by the one treatment are expected to give up the zinc, besides lead, and other easily volatile products.

PRACTICAL FEATURES OF VOLATILIZATION

The blowing of air through molten silicates will not suffice alone, and basic fluxes are added to unite with the silica where it is desired to make a full recovery, and which necessitates the application of both reduction and oxidation. Zinc oxide appears to cling tenaciously to silica where oxidation only is applied, but where lime and magnesia, with fluorspar as a thinning agent are added, initial reduction is expedited. For example, a mixture of zinc-bearing slags containing 15 per cent anthracite, and 4 per cent each of lime and fluorspar, will reduce out the zinc with comparative ease, when a blast of air will remove the remainder. The product from such operations is a mixture of zinc dust, blue powder, zinc oxide, and lead oxide, while some iron invariably comes over. The hot gases are usually caused to pass through cooling chambers of tubular construction, and from thence to the electrostatic precipitators, particulars of the operations of which are to be obtained from standard metallurgical works. It transpires that one German concern uses what is termed a "double-filter," i.e., one electro-static precipitator disposed behind the other, so that irrespective of the varying extent to which the gases are laden with oxide materials, the process proceeds unhampered. Instead of the volatilized gases being allowed to contain metallic particles, another arrangement is to blow-in high-pressure steam together with air as they emerge from the hearth. A number of specialized rough methods are used for testing how the fuming process is progressing, since particles of metallic zinc precipitate copper from acid solutions, but will not similarly react with iron solutions, whereas zinc oxide can precipitate ferric iron completely. It has been pointed out that the slag-blowing system used in the making of slag-wool can do much to disperse what zinc present is not in properly combined condition with the silica. The most resilient forms of fibres are obtained where the blowing is done with the assistance of high-pressure superheated steam, but it is doubtful if this would always give the maximum emission of zinc fume. If it were so, the means of acquiring high-grade slag-wool, and at the same time recovering zinc would appear to be a profitable proposition, and it is known that researches are proceeding on these lines. The flue dust and fume can contain from 21 to 28 per cent zinc oxide, with nearly as much ferrous oxide, when obtained from regular zinc smelting, but from slag fuming ferrous oxide can be reduced to a much lower figure, while lead which has accumulated in the processing appears as oxide to upwards of 9 per cent. Where the carbon system mentioned is used to assist volatilization, the product can contain upwards of 13 per cent carbon.

ARRANGEMENTS FOR HANDLING ALL KINDS OF ZINC WASTES

Attempts to make a full recovery of zinc from fume by distillation have rarely been fully successful, although it is invariably returned to the sinter, and which depends largely on its physical condition. For example, while more fuel is required to calcine carbonate ores than to roast sulphide ores, the resulting oxide from the former treatment is more readily reduced to metallic zinc, whereas oxide from the sulphur roast is more difficult to reduce. Zinc oxides recovered by fuming appear to lie between these two extremes.

Either form of oxide can be adapted for the subsequent electrolytic process, but has to compete with ores which have been subject to the economical sulphate roasting, and which latter only necessitate a modicum of added sulphuric acid.

An entirely different approach to the fuming system is the plant introduced by Freid. Krupp Grusonwerk A.-G. Magdeburg-Buckau, which comprises a rotary kiln arrangement for treating poor ores and residues. Dump rubble, brass residues, clinker and ashes containing zinc, and other waste materials containing zinc and lead, represent the raw materials handled. Provision is made for handling the antimony, tin, and arsenic separated during volatilization, while the sulphur content is manipulated to combine where wanted, and thereby limit the amount of sulphur dioxide entering the exit gases. The prepared mass is coarsely ground and mixed with fuel and fluxes in either dry, moist, or sludgy condition, and continuously fed into the upper-end of a slightly inclined rotary kiln. The fresh charge is dried and pre-heated by the outgoing gases at some 1,000°C. which makes use of a double-transfer of the heat, after which the temperature in the main zone approximates to 1,200° C. and the exit gases pass out at between 300° and 600° C. This process obviates briquetting, preliminary drying, calcining, and roasting, and the zinc content of the charge diminishes towards the end of the reaction zone, where the development of zinc vapours and carbon monoxide falls off. Much attention is given to the nature of the flame produced, and even where as much as 20 per cent of sulphur is present, this is made to yield a form of matte with the iron and copper contents, and does not interfere with volatilization. As many as 24 large kilns and 9 smaller kilns have been installed, and with the mechanical devices used, one complete unit including electrostatic precipitator can be handled by the one attendant, and when working well even a set of them can be dealt with by the one man. The annual throughput of these rotary plants amounts to over 1,000,000 tons, producing from 100,000 to 120,000 tons of zinc oxide, and from 15,000 to 20,000 tons of lead oxide. In this country, the amount of zinc fume collected from brass melting is quite considerable, and until recently was largely got rid of as a form of cheap green-tinted distemper, or wall covering composition, with comparatively good hiding power, as formerly there was no great demand for metallic zinc.

The Phosphate Rock Industry

The big increase in the production and consumption of phosphate has brought into focus this natural deposit used as agricultural fertilizer, and which enters into a wide range of industrial and pharmaceutical products. The fertilizer is obtained from phosphate rock and basic slag.

The rock occurs as a natural deposit in many countries, principally the United States and Russia, and is also obtained in Tunis, Morocco, Algeria, the Pacific islands of Nauru and Ocean, Egypt, Christmas Island and Japanese

islands, where there are computed to be substantial reserves; smaller deposits are known in other countries, including Ireland, and the news recently reported in *The Mining Journal* of the reopening of the Benbulbin mines, Sligo, has evoked interest.

The essential constituent in phosphate rock is tricalcium phosphate—the active agent in which is phosphoric acid.

For the production of fertilizer, phosphate rock has to undergo cleaning, drying and grinding, and is then treated

with sulphuric acid in order to make its phosphate content more assimilable. The resultant product is called superphosphate.

The extraction of phosphorus, which is the basis of the safety match industry, and is used in foods, medicines and many industries, is carried out by a different process.

MINING AND PRODUCTION

The phosphate content of the rock varies with the deposits found in the different countries; some of the best quality being worked in the Nauru and Ocean Islands, though the quantities produced are smaller, and reserves are not large.

Methods of mining also vary. In America, Russia and Ocean Island, the rock is worked by open-cast excavations and the material is friable and easily attacked. But in the North African countries, mining on a more advanced scale has to be followed as the deposits are discovered underground and call for shaft sinking and channelling for the rock. When brought to the surface it is not usually treated on the spot but conveyed, in its raw state, to consuming centres and to places where it undergoes sulphuric acid treatment.

At one time, before the war, there were definite signs of over-production of phosphate, resulting from the large Russian output and, like nitrate and potash, it called for the attention of an international cartel. But since the war, the balance has altered. Consumption has greatly increased, particularly in Europe, where large quantities have been wanted to restore the productivity of the soil.

EXPANDED OUTPUT

The necessity of a large augmentation of production from the known sources of supply prompted the matter being brought forward in discussions with E.C.A. It was agreed that efforts should be made to encourage countries to increase output and thus relieve dependence on American exports.

The mined production of phosphate rock has increased tremendously in the last decade, being computed at 16,982,000 tonnes in 1948. From 3,800,000 tons in 1938, America's output in 1948 was 8,807,903 tonnes, Morocco 3,226,326 tonnes, Tunis 1,863,710 tonnes, Algeria 670,591 tonnes, Egypt 377,005 tonnes and the Pacific islands 480,592 tonnes. Quantities mined by Russia are not known, but it is reliably estimated that they amount to far more than the 2,145,000 tons given out as their annual output before the war.

The phosphate deposits of Christmas Island have been acquired jointly by Britain and the Australian and New Zealand Governments; production last year was in the neighbourhood of 80,000 tons.

SUPERPHOSPHATE AND BASIC SLAG

At the finishing end, the production of superphosphate has also grown considerably and the last returns show that the United States is producing annually about 9,420,000 tons, Australia 1,280,000 tons, New Zealand 560,000. European output has increased. Great Britain produces over 1,000,000 tons, France 1,500,000 tons and varying quantities are turned out by Germany, Belgium, Holland, Denmark, etc. No figures are available for Russia, but outside that country, the total world production has been computed at around 22,400,000 tons compared with 15,700,000 tons in 1938.

Production of basic slag, which is a by-product obtained in smelting phosphorous-containing pig iron, is carried out in comparatively few countries. It does not need, for conversion into fertilizer, treatment with sulphuric acid, as does phosphate rock, but has to undergo grinding. The industry is largely confined to Europe, and Belgium leads in production; her output being some 820,000 tons, France 770,000, Britain 590,000, Germany, Luxembourg

and other countries are also producing. Before the war, Germany was the leading European country and output was equal to all the other Continental countries combined.

CONSUMPTION

Although Great Britain is interested in the production of superphosphate and in the slag by-product industry, we have no commercial deposits of rock and rely entirely on outside supplies. Fortunately, we have an interest in the Pacific islands deposits and in Egypt, which has relieved us from importing solely from America which last year supplied us with over 65,000 tons of rock.

Our consumption has greatly increased on account of the impetus given to the agricultural industry, while there is expanding use for elemental phosphorous in the coal, laundry, textile, leather and other industries.

Reports come to hand from time to time of new finds. The occurrence of phosphate nodules in Madras was reported about a twelvemonth ago and experiments were carried out for the production of phosphate fertilizer by fusing the mineral rock phosphate with magnesite and silica as fluxes. Farming experiments with the fertilizer thus produced showed it to be quite as good as that obtained by the rotary kiln process.

There is a growing call throughout the world for the fertilizer; the rock is being produced in ever larger quantities and extensions to plants are taking place in various countries.

REVIEWS

Mining and Milling Explained.—(*The Northern Miner Press Ltd., 122, Richmond Street West, Toronto, Canada.*) Price \$1.

This little booklet, based on articles which have appeared in *The Northern Miner*, describes the basic mining and ore treatment operations in the sort of non-technical language which any investor can easily follow. The first article is devoted to a description of typical mine workings and follows the ore reduction process through to the flotation stage.

The second section describes a representative set of milling and treatment processes, both for gold and copper ores through to the final refining process. There are also helpful sections on sampling and diamond drilling, together with a glossary of common mining terms.

Handbook of Chemical Methods for the Determination of Uranium in Minerals and Ores.—Published for the D.S.I.R. by H.M.S.O., Price 1s. (U.S. 0.30c.), by post 1s. 1d.

The value of mineral deposits containing uranium depends for final assessment on the results of chemical analysis. It is therefore essential that reliable chemical methods should be employed in this assay and this handbook describes almost down to the last detail methods which have been found satisfactory in practice, so that they can be used by those with little previous experience in the field. The analytical procedures so described are the outcome of some four years experience at the Chemical Research Laboratory, Teddington, Middlesex, and are designed to deal with any type of ore containing from one-tenth per cent uranium oxide to high grade pitchblende which may contain 80 per cent uranium oxide.

The handbook was prepared at the request of the Division of Atomic Energy, Ministry of Supply; written by Mr. F. H. Burstall, head of the Radiochemical Group and by Mr. A. F. Williams, head of the Analytical Section, of the Chemical Research Society, and is a companion volume to the "Prospector's Handbook to Radioactive Mineral Deposits," recently issued by the Geological Survey and Museum, published by H.M.S.O. at 6d., or 7d. by post.

Technical Briefs

The Concentration of Cobalt Ore by a Roast-flotation Process

Zimmerley and Ravitz (Trans. Am. Inst. Min. Met. Eng., 187, Tech. Pub. No. 2929B), have described a pilot plant investigation on the concentration of Blackbird cobalt ore which has a high pyrite content. In addition, the ore contains pyrrhotite, 0.5 per cent—1 per cent cobalt in the form of cobaltite and 1—2 per cent copper in the form of chalcopyrite. The copper can readily be concentrated by selective flotation and the cobalt recovered in the form of a concentrate containing 4—5 per cent cobalt. This concentrate is then roasted at 425—450°C. and again floated. The roasting produces an oxide coating on the iron mineral particles which prevents them floating and a high recovery of cobalt is obtained, the concentrate containing more than 20 per cent cobalt.

Humphreys' Spiral Concentrator as Cleaner of Fine Coal

Four coals were treated in the Humphreys' spiral concentrator, and the products were examined by float-and-sink and screen-sizing tests to determine fundamental performance characteristics, writes an American correspondent. These tests were made by M. R. Geer and H. F. Yancey, mining engineers, C. L. Allyn, chemical engineer, U.S. Bureau of Mines, Seattle, Washington, and R. H. Eckhouse, Research Fellow, University of Washington, Seattle, Washington.

The basic performance characteristics of the spiral were found to be the same for all four coals. The coarsest fraction of heavy impurity stratified so far out in the stream that it could not be removed through the refuse ports and thus either entered a middling product or contaminated the washed coal in the case of a two-product separation. Impurity particles finer than 100-mesh also were carried out in the main body of the stream and were not removed in the refuse product. Little loss of clean coal in the refuse occurred in sizes coarser than 28-mesh or finer than 100-mesh, but considerable coal of intermediate size stratified in the stream that was drawn off through the refuse ports.

Because of this modifying influence of particle size, the spiral is unable to make an efficient two-product separation between coal and impurity without some re-treatment, according to Mr. Geer and his co-research workers. Recirculation of a middling product through the same spiral as a means of obtaining more efficient operation was not attempted in this investigation. Retreatment of a combined refuse-middling product would appear to offer greater promise for providing maximum efficiency.

Because of the sizing characteristics of the spiral, a classified feed can be treated with higher efficiency than is possible on a natural raw coal. For this reason, semi-classified feeds, such as silt-bank or classifier-underflow materials, can doubtless be treated with higher efficiencies than those shown for raw coals in this respect.

Messrs. Geer, Yancey, Allyn and Eckhouse state that performance, of course, is only one of many factors that enter into the choice of cleaning equipment. The fact that the one company now using the spiral for cleaning coal has built a second spiral plant is ample evidence, they point out, that the inherently low efficiency of this unit may be overshadowed by the low operating costs afforded by its extreme simplicity. It must be realized also that silt bank material or the underflow product of a thickener operated as a hydroseparator such as currently are being treated in the spiral constitute semi-classified feeds.

The Massco Circuitron

A preliminary report on the Massco circuitron has recently been published by Craig and co-workers (Trans. Am. Inst. Min. Met. Eng. 187, Tech. Pub. No. 2948B). This instrument, which may be quite new to many of our readers, utilizes a current derived from the circuit of the classifier motor and energy derived from the noise of the grinding media to move an oscillating disc. This disc operates via a photo-electric cell to control the speed of the ore feeder and hence the amount of ore fed to the mill. The instrument represents yet another stage in the automatic control of ore treatment.

New Swiss Non-ferrous Rolling Mill Train

The Swiss metal works, Selve & Cie, of Thun, have officially put into operation a new rolling mill train for non-ferrous metals, built by the Swiss companies Von Roll'sche Eisenwerke, Gerlafingen, and Brown Boveri AG, Baden, reports Reuter. The rolling train, 25 metres long, cost approximately 3,000,000 Swiss francs. It is the first rolling train ever to be built by Swiss firms.

The new equipment is to be used to process non-ferrous metal blocks of up to 1,000 kilogramme weight and 200 millimetres thickness into sheets having a maximum width of 1,400 millimetres and a length of up to 20 metres. The rolling train has two reversible rollers with a diameter of 80 centimetres each and a length of 1.60 metres.

Mining and Milling at the San Xavier Mine

Mining and milling methods at the San Xavier mine of the Eagle-Picher Company, Pima County, Arizona, have been described by Duff and Kumke (U.S. Bur. Mines Inform. Circ. No. 7581, 1950). The deposit contains chalcopyrite, galena, sphalerite and pyrite and the ore, after mining, is ball milled using two mills operating in closed circuit with a spiral classifier. The lead and zinc are separated by selective flotation, the lead concentrate which is obtained containing the silver and copper. A novel feature of the plant is that the scavenger concentrate, which is obtained from the last three cells of the zinc circuit, is ball milled with cyanide and returned to the head of the lead circuit.

Coal-burning Gas Turbine Locomotive

The long-awaited development of an efficient coal-burning gas turbine locomotive has been brought nearer with the signing of an agreement between the Department of Mines and Technical Surveys and McGill University to design, build, and test co-operatively an experimental stationary engine based on a recent invention by Professor Donald Mordell, Director of Gas Dynamics Laboratory, at McGill. The invention, a new heat exchange cycle, exhibited promising potentialities in the operation of coal-fired gas turbines during preliminary investigations and design work carried out since the middle of last year by Professor Mordell and the Mines Branch.

If proved to be successful, such a locomotive would be an economic boon to Canadian railways and coal-mines alike. To the railways it promises a locomotive with a high thermal efficiency at an extremely low operational cost, and to the coal mines it would mean the opening up of a valuable market outlet for the large quantities of slack and other coal fines, for which the market has been dwindling rapidly.

In Canada it is felt that the successful utilization of such a coal-fired gas turbine would not only forestall the loss of the remaining railroad market but would result in the industry ultimately regaining much of the marketing ground already lost to dieselization.

Metals, Minerals and Alloys

There is little to add to last week's report on the basic metal and mineral situation. As the position is more closely scrutinized in the United States, the urgency of any further immediate action is considered less pressing and there seems a disposition to wait and see how the supply position will look in two or three months' time, when military orders will have been put in hand and the effect of civilian cuts on available supplies can be more clearly appraised. There will at present be no ceiling prices on primary copper, lead or zinc, though secondary metal ceilings are under advisement.

Unfortunately, if President Truman's call for a 25 per cent increase in the productive capacity of the United States in the next five years is answered affirmatively, the productive power of the world's mines is likely to be severely taxed and a metal stringency likely for some years to come.

A strategic raw materials agreement is being actively promoted. Representatives of the U.S.A., U.K. and France have agreed that a number of standing international groups should be formed to study the position of the different materials and make proposals for aiding the situation, and the U.S. Government has agreed to issue invitations at once to friendly governments to participate and will set up a working group in Washington.

The Ministry of Supply has postponed the introduction of the Statutory Order prohibiting the use of zinc and copper for certain manufactures until March 1. The firms concerned have until July 1 to use stocks of metal and components on hand.

Copper.—Consumers in the U.S. continue to try and build up inventories, so that demand remains active and supplies tight; although in a month or two's time an easier supply position is hoped for. The Copper Institute figures for December show some increase in refined but stocks were lower. Crude output was 90,643 s.tons (90,148 in November); refined was 109,464 s.tons (101,410); while deliveries rose to 121,958 s.tons (113,715). Despite the increased output of refined, metal stocks declined to 49,040 s.tons from 57,805 s.tons a month earlier. Sales of January copper reported up to the middle of the month were 98,648 with advance bookings for February already 20,164 s.tons.

Reports regarding the wage dispute in the Northern Rhodesian copper belt are somewhat more favourable. The natives' Union have made fresh proposals which have been forwarded to the London directors and it is hoped that a stoppage may be avoided.

Under the title "Who is the largest hoarder of copper?" Messrs. Bache and Co. credit the U.S. Government stockpile with an accumulation of 400,000 s.tons. Industrial consumption in 1950 they estimate at 1,450,000 s.tons which should be cut by 478,000 s.tons under the restrictions on use proposed. With domestic output 90,000 s.tons a month, and imports of 45,000, a monthly supply of 135,000 s.tons is indicated. With civilian consumption cut to 81,000 s.tons monthly, this would leave 54,000 s.tons a month for Government needs, which would allow 15,000 s.tons for defence, 40,000 s.tons for stockpiling. Is not the stockpile complex becoming something of a Frankenstein?

There are now two Copper Import Duty Suspension Bills in the House of Representatives and one in the Senate.

Great efforts have been, and are being made to develop the mining industry of Yugoslavia. The Bor Mines, severely handled by the Nazis, have been brought back to a yield of 40,000 tonnes of blister in 1950, and impor-

tant discoveries are said to have greatly increased their life. At the old Majdanpek Mine, surveying and prospecting have indicated copper ore of + one per cent grade with some gold values. Geologists are busy examining deposits in Macedonia, Herzegovina, Bosnia and Montenegro. A large electrolytic refinery is now being constructed at Bor, which will take care of all Yugoslavia's production, as well as a rolling mill.

Lead.—U.S. demand continues to run ahead of supply, with sales at 17c. for domestic and 18½c. duty paid foreign lead. Stocks were rising slowly in October and November and it is thought that purchases of late have been partly for inventories. U.S. lead stocks in December were lowered by over 9,000 s.tons to 33,420 s.tons. Most sellers have still to open their books for February.

Tin.—Buying of tin, especially in the Straits, continues to be the chief feature of the market. The U.S. price on Tuesday rose to 175c. per lb. nominal; the latest English and Straits quotations are given below.

The December production of Indonesia was 2,830 tons, making the year's total 32,099 tons against 28,965 tons in 1949. Bolivia exports in November were 2,300 tons, giving an 11 months' total of 27,558 tons against 30,368 in 1949. It is reported from Brussels that the U.S. Government will not avail itself of the escape clause in the agreements for purchasing 30,000 tons of Dutch and Belgian tin production. It would have been surprising if they had.

Zinc.—Despite the fact that U.S. zinc output in December was the best for over two years and that the year's total was 910,375 tons against 870,113 in 1949, supplies of the metal continue the scarcest of the four major non-ferrous metals. No further confirmation is yet available of the decision to stop stockpiling, at least temporarily. The amount thus absorbed last year was 128,250 s.tons compared with 91,526 in 1949, and the total stock is computed at 600,000 s.tons.

In connection with the international shortage of zinc, it is of interest to note that the Stolberger Zinc A.G., Maubach, near Aix-la-Chapelle, West Germany, which is exploiting occurrences discovered in the 13th century, is to receive D.M.2,400,000 from E.C.A. counterpart funds to be used to expand zinc output from the present level of 400 tonnes per annum to no less than 3,000 tonnes per annum. The firm is one of the foremost zinc and lead producers in the Federal German Republic. Repayment is to be made within five years by means of shipment of metals.

Asbestos.—U.K. imports of asbestos in November were 9,961 tons against 10,303 tons in October.

Cobalt.—A cobalt refinery to exploit a new process for treating concentrates containing more particularly arsenic and nickel is being built near Salt Lake City to process North American ores, and it is hoped by the end of the year that it will produce 4,250,000 lb. of cobalt a year. The U.S. draws her present supply of approximately 8,000,000 lb. from the Congo and it is insufficient for her needs. The projected supply from the new refinery would raise the supply to 12,000,000 lb. and would make the present severe rationing unnecessary.

Manganese.—A report of the U.S. Bureau of Mines gives the imports of ore in the first nine months of last year as 1,421,594 s.tons of all grades. India supplied 497,725 s.tons, South Africa 379,773 s.tons, the Gold Coast, 293,732 s.tons and Brazil 71,006 s.tons. The U.S.S.R. supplied only 41,734 tons.

Nickel.—The United States will soon ban the use of nickel and stainless steel for civilian purposes according to Mr. Nelson A. Miller, an official of the N.P.A. Meanwhile, it is announced in Washington that the Mining Equipment Corporation of New York will re-open and operate the Government's nickel plant in Cuba. Produc-

tion is expected to be resumed in about a year's time. The plant has a rated capacity of 16,000 tons a year, all of which will be taken up by the Government for stockpiling and other purposes.

The International Nickel Company has applied for a special and exclusive prospecting licence covering about a thousand square miles in the Dodoma and Kondoa districts of Central Tanganyika. This follows a recent survey tour in Tanganyika by some of the Company's geologists.

Sulphur and Pyrites.—U.K. imports of sulphur in November were 35,236 tons against 36,227 tons in October. Pyrites imports totalled 10,405 tons (19,836 tons in October).

Tungsten.—The acute scarcity of tungsten concentrates continues. In the U.S. the Government prices last week rose to \$62/68 per s.t. unit. In London wolfram has been quoted at 460s./480s. per unit c.i.f.

Silver.—Last week's rise in foreign silver prices in the United States, to which London promptly conformed, was due to the Bank of Mexico ceasing to offer silver; in consequence, there was not enough foreign silver to satisfy orders and domestically mined silver had to be substituted at the statutory price of 90½c. per f.o.z.

U.S. imports of silver in 1950 were 95,135 f.o.z. compared with 95,795 f.o.z. in 1949. Domestic output for the first 11 months of last year was 38,129 f.o.z. against 34,559 f.o.z. a year earlier.

The London Metal Market

(From Our Metal Exchange Correspondent)

After a substantial fall on Friday, the market has remained quiet with a moderate turnover and with sufficient cash metal on offer to maintain only a small backwardation, but it is feared that this state of affairs has not become permanent and that the probable re-establishment of a considerable backwardation is only a matter of time. An added difficulty to foreseeing the possible price trend is that the London market is, for the moment, entirely divorced from both that in Singapore and that in New York, and that the process of realignment can be effected in more than one way. The size of the stocks held in official warehouses is causing comment, but it must be pointed out again that a large tonnage of this metal belongs to the Ministry of Supply, and it is hoped that some action will be taken to cease including this tonnage in the published figures in order to give a truer picture of the metal which is really available. For the first fortnight of the New Year the rate of U.K. demands has been above normal for the time of year.

The Singapore market continues to be very active with buyers not always being fully satisfied; whilst in New York, consumer business is only fair owing to the uncertainty about the U.S. Government's intentions for controlling tin, and in this connection it is interesting to note that in some reports of the Strategic Raw Materials Agreement tin is mentioned as being outside its present scope, but whether this is so or not has not yet been confirmed.

On Thursday the official close on the tin market was: Settlement price £1,225, Cash Buyers £1,225, Sellers £1,230; Three Months' Buyers £1,210, Sellers £1,215. In the afternoon the market was firmer. Turnover for the day was 345 tons. Approximate turnover for the week was 1,275 tons.

The Eastern price on Thursday morning was equivalent to £1,320 10s. per ton c.i.f. Europe.

Iron and Steel

The wide discrepancy between the available supplies of steel and cement demand is somewhat paradoxical. Not only in the United Kingdom has steel production been

raised to record levels. U.S. output in 1950 reached a new high of 96,750,000 tons, and in the final quarter of last year production in both Belgium and France reached record heights. Still the world demand for steel far outdistances present capacity, and apprehensions that raw material supplies may not keep pace with the rate of expansion in the steel industry, are shared by both British and European producers.

The scarcity of coal is the most serious launching factor, although ore and scrap are also in short supply. Substantial tonnages of ore have had to be cancelled owing to lack of transport. To some extent the Mediterranean position is now easier, and more cargo space has been obtained for ore freights. But the cost has risen enormously and is estimated to involve blast furnacemen in additional charges equal to about 35s. per ton on pig iron. Obviously a financial burden of such dimensions could not be borne by the producer, and it looks as though a general revision of iron and steel prices must be imminent.

Quite obviously the persistent rumours that nationalization of the steel industry will be postponed are utterly groundless. They have been explicitly repudiated by the Minister of Pensions, and the same conclusion is implied in the notice issued by the Minister of Supply intimating that after May 15 licences will be needed to produce more than 5,000 tons a year of iron ore, pig iron, ingot steel, or hot rolled products. After that date such activities will be limited—apart from the licensed undertakings—to the Iron and Steel Corporation and the nationalized companies. This of course is in accordance with the terms of the Iron and Steel Act.

Meanwhile, producers are maintaining outputs at the highest possible level and rather more material is being issued to home consumers. There has, however, been a substantial cut in the deliveries of sheet steel. Motor manufacturers are to receive 15 to 20 per cent less than in the final quarter of 1950 and already some establishments are working a four-day week. Export quotas have also been cut and the scarcity of zinc means that galvanizing will virtually cease.

Light plates are also at the moment almost unobtainable, as the majority of the makers are fully booked for many months ahead, whilst re-rollers, though they have full order books, find their activities cramped by the shortage of small square and flat billets.

Tinplate.—Owing to the advance in the price of block tin the home price of Welsh tinplate has been increased from 41s. 9d. to 44s. 4d. per standard box, and export plates from 42s. 9d. to 45s. 4d. and upwards. A greatly increased number of orders were placed during the past week for tinplate, mainly for delivery during the latter half of this year. There is no improvement in the acute shortage of iron and steel scrap in the South Wales market.

Coal

Immediate increases in pay and improved conditions for Britain's miners were agreed last week between the National Coal Board and the National Union of Mine-workers. Under the settlement negotiated the national weekly minimum of adult day wage workers underground are to be increased by 7s. to £6 7s., and of surface workers by 5s. to £5 10s. The national shift rates of craftsmen are to be increased by 2s., and the addition of 2s. 6d. per shift when underground raised to 2s. 10d. Winding engine-men's shift rates are to go up by 2s. and their national minimum shift rate increased to 25s. The increases are subject to confirmation by the N.U.M. The Board refused

to grant the additional week's paid holiday this year because of the loss of output it would entail, but the principle of the extra week had already been accepted; while they have undertaken to make an initial contribution of £2,000,000 to the pensions fund when it is established. The union leaders undertook to put to its membership the proposal to introduce foreign labour in the pits, and they will continue to intensify their efforts to ensure the fullest attendance on the Saturday shift. A campaign is to be carried on to reduce voluntary absenteeism and to suppress unofficial stoppages; and efforts are to be made to ensure the regular cleaning of coal faces, and the completion of the cycle of operations every 24 hours. There was a recovery last week from the effects of the New Year holidays on coal output. The amount of saleable coal produced amounted to 4,448,400 tons as against 3,575,800 tons in the previous week. Deep-mined output increased from 3,438,300 tons to 4,290,400 tons, and opencast from 137,500 tons to 158,000 tons. Manpower in the week ended January 6 further improved by 800 to 689,400, and is the highest total since the end of September. Current consumption continues at a higher rate than production, and distributed stocks on January 6 stood at 11,500,000 tons—a decrease of 947,000 tons compared with the previous week.

JANUARY 18 PRICES

COPPER

Electrolytic £202 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid £136 0 0 d/d
Soft empire, including secondary lead ... £136 0 0 d/d
English lead £137 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ... £151 0 0 d/d
G.O.B. spelter, domestic £151 0 0 d/d
Electrolytic and refined zinc £155 0 0 d/d

ANTIMONY

English (99%) delivered,
10 cwt. and over £250 per ton
Crude, 10 cwt. and over £195 per ton

NICKEL

99.5% (home trade) ... £406 per ton

OTHER METALS

Aluminium, £124 per ton. Palladium (scrap), £7 10s. oz.
Bismuth, 17s. lb. Platinum, £27/33 5s. nom.
Cadmium, 17s. 3d./18s. lb. Platinum (scrap), £26 nom.
Chromium, 5s. 3d. lb. Rhodium, £45 oz.
Cobalt, 15s. 6d. lb. Ruthenium, £25 oz.
Gold, 248s. f.o.z. Quicksilver, £58.15s./£59 nom.
Iridium, £55 oz. nom. ex-warehouse.
Magnesium, 1s. 6d. + 2s. lb. Selenium, 25s. nom. per lb.
according to quantity. Silver (bar), 78½d. f.o.z. spot
Osmidium, £30 oz. nom. and forward.
Osmium, £70 oz. nom. Tellurium, 14s. 4d. lb.
Palladium, £8 10s. oz.

ORES, ALLOYS, ETC.

Bismuth 65% 10s. 10d. per lb. c.i.f.
50% 9s. 1d.

Chrome Ore—
Rhodesian Metallurgical (lumpy) £11 per ton c.i.f.
" " (concentrates) £11 per ton c.i.f.
" " Refractory £10 12s. per ton c.i.f.
Baluchistan Metallurgical ... £10 11s. per ton c.i.f.
Magnesite, ground calcined ... £25 - £26 d/d
Magnetite, Raw ... £9 - £10 d/d
Molybdenite (85% basis) (Nominal)
Wolfgram (65%), U.K. 480s. 480s.
Tungsten Metal Powder (for steel manufacture) 29s. 6d. nom. per lb. (home)
Ferro-tungsten ... 27s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots ... £30 18s. 9d. per ton
Ferro-manganese, home £30 5s. 11d. per ton
Ferro-manganese, export Nom.
Brass Wire ... 2s. 2½d.
Brass Tubes, solid drawn 1s. 9½d.

Mining Men and Matters

Senhor Jose Pina de Aragao E Costa has joined the staff of Messrs. Mason & Barry, in Mina de Sao Domingos, Baixo-Alentejo, Portugal.

Mr. J. N. V. Duncan has been appointed managing director of Rio Tinto in succession to Sir Mark Turner, who will be deputy chairman and finance director.

Mr. F. T. C. Doughty has left Cyanamid Products, to take up the position of managing director of Mineral Recovery Ltd., a newly-formed company.

Mr. Lewis Douglas, former United States Ambassador to Great Britain, has been appointed a director of Union Corporation.

Mr. J. I. L. Edwards has been appointed acting manager of the President Brand and President Steyn Gold Mining Companies, Orange Free State.

Mr. C. J. Endert has been appointed to the board of Kagera Mines in succession to Mr. F. A. Begemann who has resigned owing to ill-health.

Sir Cyril F. Entwistle has been elected chairman of Nigel Van Ryn Reefs, and Mr. W. L. Taylor has been appointed a director.

Sir Lewis Fermor, President-Elect of the Institution of Mining and Metallurgy left for India last month to attend the Centenary Celebrations of the Geological Survey of India.

Mr. Kenneth Hall, managing director of Northern Aluminium Co., will be the Council's first chairman, and **Mr. H. R. Murray Shaw** has been appointed as the director.

Mr. E. S. Hallett has been appointed a director of Luipaards Vlei Estate & Gold Mining in place of **Mr. H. W. Jones**, who has resigned.

The death is announced of **Major Owen Hart**, one of the directors of Derbyshire Stone.

Lieut.-Col. A. C. Hoey has resigned from the board of Kenya Consolidated Gold Fields and Messrs. W. J. S. Oates and J. H. Henley have been elected directors.

Mr. P. M. Johnstone has resigned from the staff of Austral Malay Tin, and has joined Mines Management Pty. of Sydney. Mr. Johnstone holds the position of general manager, Dittmer Gold Mines, Queensland.

Mr. R. J. McVety has been appointed a director of Edjudina Consolidated Gold Mines.

Mr. F. D. L. Noakes transferred in September, 1950 from Rhodesia Copper Refineries to the Rhokana Corporation, where he is now employed as metallurgist at the Central Laboratory.

Mr. D. de V. Oxford has resigned his position as chief surveyor to Falcon Mines, Southern Rhodesia, and has joined the engineering staff of Nchanga Consolidated Copper Mines, Northern Rhodesia.

Mr. G. C. Pengilly has left the Directorate of Opencast Coal Production to join Amalgamated Banket Areas as technical mining assistant.

Mr. Eric Weiss and **Mr. D. K. Bailey** have been appointed to the board of Mineral Separation.

Mr. A. M. A. Wijmans has been appointed general managing director, and **Mr. R. Tijken** and **Mr. M. J. A. C. Verschure** have been appointed managing directors of N. V. Billiton Maatschappij with effect from January 1, 1951. **Mr. F. A. Begemann** has resigned his office as a managing director of the company for reasons of ill health, with effect from the same date.

Dr. S. A. Wrobel has been awarded the degree of Ph.D. in the Faculty of Engineering (Mineral Dressing), London University.

Messrs. Lawrence Fisher & Hoffman, 427, South African Mutual Buildings, Commissioner and Harrison Streets, Johannesburg, have been appointed Secretaries to the Roberts Victor Diamonds, Ltd., as from January 1, 1951.

Richmond Secretariat, Ltd., 203, Salisbury House, London Wall, E.C.2, have been appointed London Secretaries and Registrars to Roberts Victor Diamonds.

The **Cornish Institute of Engineers** will hold a general meeting of members and associates in the Lecture Theatre of the Camborne School of Mines, on January 26, 1951, at 7 p.m., when two films, "Hard Rock Loading" and "Trackless Mining in Coal" will be shown, by permission of Messrs. Joy Sullivan Ltd., and introduced by Mr. G. Blackmore.

Southern Van Ryn Reef Gold Mining have appointed Quadrant Trust Ltd., 55/56, Pall Mall, London, S.W.1, as their London Secretaries and Registrars. All documents for registration in respect of the company's shares as from January 1, 1951 should, therefore, be forwarded to Quadrant Trust, Ltd.

Company News & Views

Rand Selection's Increased Assets

Even with revenue from the sale of freehold property conspicuous by its absence (£42,599 in 1949) and despite a non-recurring item of expense, namely £32,754, connected with the loan stock issue in August, 1950, Rand Selection Corporation's profit figures for the year ended September 30, 1950, are well up on the 1949 results.

Gross revenue for the period under review amounted to £697,787 (£574,617) and although net profit before taxation worked out at £625,643 (£537,283) the dividend was maintained at 2s. per share, equivalent to 40 per cent on the £1,125,000 issued capital. This has become something in the nature of an annual event, for 1949 marks the eighth successive year for which the same amount has been paid.

Yet the Corporation has much need to strengthen its liquid position. Quite apart from the rumour, so far unconfirmed, that it might take over South African Townships on the basis of a share exchange, there are clearly several other ways open to this Corporation as a finance company in the Anglo American Corporation group in which its free capital might be gainfully committed.

Steps already taken to build up its financial resources are reflected in the latest balance sheet where the privately placed £1,000,000 of 4½ per cent Loan Stock in August of last year is registered, as is also an increase in the Corporation's net current assets which now total £368,361 against a net current liability of £132,113 in 1949, an improvement of no less than £500,474.

During the year the opportunity was taken of increasing its shareholdings in other concerns and these have now risen to £4,025,183 (£3,408,709) but the book value which these figures represent is dwarfed when compared with the market value, which at September 30, 1950, amounted to £10,114,515.

The annual meeting will be held in Johannesburg on February 16 next when it is hoped that the chairman, the Hon. H. V. Smith, will make a statement concerning the rumour of the projected merger with S.A. Townships.

Barclays Bank Leads Big Five

Net profit of Barclays Bank for 1950, rising from £1,866,280 to £1,971,834, showed the largest advance of the Big Five. In 1949 the directors transferred £700,000 from the net profit to strengthen the contingency account which this year received nil, but the reserve fund which was ignored last year received £750,000 bringing it up to £13,750,000. The amount carried forward was also increased from £478,409 in 1949 to the present figure of £554,629. Dividend rates were the same as those paid last year, ten per cent on the "A" stock and 14 per cent on the "B" and "C" stocks.

Some idea of the financial strength of this institution can be gathered from the consolidated balance sheet where total assets of the Barclays group are recorded at £1,903,828,550 (£1,814,286,599). During the year current, deposit and other accounts rose by £59,744,176 to £1,759,139,936, an upward movement the chairman, Sir William Goodenough, stated, which is partly accounted for by the influx of foreign capital.

In his statement Sir William also reminds us that although the present upsurge of activity in the United States, especially in connection with its policy of building up stocks of strategic raw materials, has materially assisted the U.K. in shoring up its reserves of gold and dollars, it has at the same time "brought about a substantial addition to our liabilities in the shape of sterling balances which

are kept in London by other members of the sterling area." It has also, Sir William adds, caused a worsening in our terms of trade so that in November last it would have cost us £18,000,000 more in exports to pay for the same amount of imports.

The annual meeting is to be held at the Bank's head office, 54, Lombard Street, London, E.C., on February 8 next.

Bank of Australasia Pays 10 per cent

The Bank of Australasia for the year ended mid-October, 1950, showed a net profit of £290,874 (£278,874) and an increased dividend payment of 10 per cent (9 per cent) by raising its final from 5½ per cent to 6½ per cent. The carry forward was also better at £427,595 (£384,221). These are all gains and if not spectacular ones they faithfully record the steadily improved earnings of the bank in recent years.

The balance sheet revealed more striking developments and assets have risen to £171,366,772 compared with £137,386,516 in 1949. Practically the whole of this rise was due to deposit expansion which jumped to £134,097,274, an increase of £29,682,513. The larger part of these additional resources appear to have been used to increase the special account with the Commonwealth Bank of Australia to £44,941,000 (£29,441,000) and to support advances which, during the year, rose to £65,027,207 (£59,361,250).

The date of the annual general meeting, January 18, coincided with that of the Union Bank of Australia and shareholders and readers alike will be interested to read on page 66 what the chairman, the Hon. G. C. Gibbs, has said about the proposed merger of these two financial institutions.

Further Trouble at South Crofty

After a long uphill struggle against Government policy, obsolescent equipment and, recently, the increasing inflow of water into the mine from the adjacent areas, it was to be hoped that South Crofty would be spared further misfortune. Unfortunately, this was not to be, for on Jan. 7 a fire broke out among the three acres of wooden sheds surrounding Cook's Kitchen shaft. It is understood that although prompt action by the staff of the mine, together with the county fire units, prevented the blaze from endangering the pithead winding engine, it was not possible to bring the fire under control before serious damage to the ore dressing machinery and the loss of the surrounding wooden sheds occurred.

Progress at Stilfontein

The December quarterly report of Stilfontein Gold Mining states that at the year end the Charles shaft had reached a depth of 2,449 ft. and the Margaret shaft 1,071 ft. As announced previously, the Charles shaft intersected the Vaal Reef on December 15, 1950, at a depth of 2,402 ft. and from 21 sampling sections taken at intervals of 5 ft., the assay averaged 27.1 dwt. over 10.1 in. equivalent to 274 in. dwt. Since that time a development drive of 30 ft. from the shaft has averaged 26.06 dwt. over 12.7 in. equivalent to 331 in. dwt. Preparations are now being made for the commencement of development.

During the quarter the Margaret shaft was sunk 569 ft., which compares favourably with the 373 ft. sunk in the previous quarter.

At both shafts satisfactory progress is being made with the installation and erection of the permanent equipment and buildings. Capital expenditure for the quarter ended December 31, 1950, amounted to £487,512 compared with £854,284 in the September quarter and £373,894 in the June quarter.

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THE BANK OF AUSTRALASIA

The One Hundred and Seventeenth Annual General Meeting of The Bank of Australasia was held on January 18 in London.

The Hon. G. C. Gibbs, C.M.G., the Chairman, presided and, in the course of his speech, said:

Our Balance Sheet total has now reached £171,000,000, a 25 per cent increase over last year's total Current, Deposit and other Accounts which show the very large increase of nearly £30,000,000. There is an increase of £15,500,000 in the Special Account with the Commonwealth Bank of Australia which arises from a partial freezing of our increased deposits in Australia, and carries interest at the rate of half per cent per annum. If, in order to meet the essential needs of our customers, we have to borrow from the Commonwealth Bank the rate of interest charged is $3\frac{1}{2}$ per cent per annum.

Our Advances to Customers have risen by nearly £6,000,000 in spite of our following closely the policy of the Commonwealth Bank of Australia in regard to advances.

There is also a noteworthy rise of £400,000 or 40 per cent in Bank Premises and Sites.

We have been able to increase the final dividend for the year from $5\frac{1}{2}$ per cent to 6½ per cent, making 10 per cent for the year compared with the 9 per cent we have paid for the past few years.

THE PROJECTED MERGER

I now wish to refer to the proposed merger of The Bank of Australasia and The Union Bank of Australia Ltd. Since October, 1949, your Directors and the Directors of the Union Bank have, with the assistance of their legal and accountancy advisers, given very close study to the many legal, accounting and administrative problems which have been necessarily involved, and I am glad to be able to tell you that to-day The Bank of Australasia and The Union Bank of Australia Ltd. are issuing circulars to their Shareholders, advising them of a Scheme of Arrangement and Amalgamation under the English Companies Act which is to be presented for the merger of these two concerns into a new Bank, and are sending out notices convening the necessary and separate meetings of Shareholders of the two Banks for the purpose of considering and approving the Scheme which is being submitted to them.

I would first like to tell you the objects the Directors of the two Banks have had in mind in planning the merger,

which they are convinced is in the best interests of both Shareholders and Customers. The formation of a larger and, therefore, an even stronger Bank possessing highly organised international connections will create an organisation particularly well equipped to meet the future requirements of expanding trade and industry and to provide still more comprehensive and competitive banking services for the Australian and New Zealand communities. The banking facilities which the new Bank will be able to offer its customers will be more widespread than either your Bank or the Union Bank would be capable of providing alone, while the existing policy of the two Banks in opening branches in growing areas will be capable of acceleration out of the combined resources of the new Bank.

FULLER TECHNICAL SERVICES

I would like to take this opportunity of outlining to you the Scheme by which your Directors and the Directors of the Union Bank propose to carry the merger into effect.

First of all, I would tell you that the name of the new Bank into which it is proposed that your Bank and the Union Bank will be merged is to be "Australia and New Zealand Bank Limited."

It is proposed that the Australia and New Zealand Bank Limited shall have an authorized capital of £17,000,000 divided into 8,500,000 shares of £2 each, credited as £1 paid. The paid up capital of the new Bank will, therefore, be equal to the aggregate of the paid up capital of the two merging Banks and, before the shares in the new Bank are allotted and issued to you and to the Union Bank shareholders, the uncalled liability of £1 per share will be converted into reserve liability, i.e., into capital callable only in the event of the new Bank being wound up. This reserve liability ensures the continuance, in the interests of the customers of your Bank and of the Union Bank, of the principle of reserve liability which exists under the capital structures of the two merging Banks.

It is therefore proposed that each Proprietor of The Bank of Australasia will receive five shares of the new Bank of £2 each, £1 paid, for each £5 share held by him in The Bank of Australasia, and each Union Bank shareholder will receive similarly five such shares of the new Bank of £2 each, £1 paid, in exchange for every Union Bank share of £15 each, £5 paid, held by him.

The report was adopted.

BARCLAYS BANK LIMITED

SIR WILLIAM MACNAMARA GOOD NOUGH, BART., LL.D., Chairman.

ANTHONY WILLIAM TUKER, Deputy Chairman.

CUTHBERT FITZHERBERT

FREDERICK CECIL ELLERTON } Vice-Chairmen.

General Managers: G. F. LEWIS, R. G. THORNTON,

J. D. COWIN, E. BRIMLOW.

Statement of Accounts, 31st December, 1950

LIABILITIES

Current, Deposit and other Accounts.....	1,287,849,865
Acceptances, Guarantees, Indemnities, etc., for account of customers.....	64,587,211
Paid-up Capital.....	15,858,217
Reserve Fund.....	13,750,000

ASSETS

Cash in hand and with the Bank of England.....	106,194,255
Balances with other British Banks and Cheques in course of collection.....	51,319,901
Money at Call and Short Notice.....	88,047,000
Bills Discounted.....	315,581,740
Treasury Deposit Receipts.....	97,500,000
Investments.....	310,898,829
Advances to customers and other Accounts.....	325,967,491
Investments in Subsidiaries:—	
The British Linen Bank.....	3,727,658
Other Subsidiaries.....	8,554,670
Other Trade Investments.....	1,588,670
Bank Premises and adjoining Properties.....	8,073,869
Customers' Liability for Acceptances, Guarantees, Indemnities, etc.....	64,587,211

HEAD OFFICE: 54 LOMBARD STREET, LONDON, E.C.3

RAND SELECTION CORPORATION, LIMITED

(Incorporated in the Union of South Africa)

ABRIDGED REPORT OF THE DIRECTORS for the Year ended 30th September, 1950

CAPITAL.—Both the Corporation's authorised capital of £1,250,000 in 5,000,000 shares of 5s. each and issued capital of £1,125,000 in 4,500,000 shares of 5s. each have remained unchanged.

LOAN STOCK.—In August, 1950, your Directors created £1,500,000 four-and-one-half per cent Ten-year Unsecured Loan Stock 1960. Of this amount £1,000,000 was subscribed and allotted early in September, 1950. The stock was issued at 97 per cent.

PROPERTY.—The Corporation's holdings of property consist of the following:

Freehold.—(1) The farm Weltevreden or Brakpan No. 5, in extent 1,917 morgen, on which is situated a portion of Brakpan Mines, Limited.—As reported at the last Annual General Meeting, Breuthurst Extension No. 1 Township, in extent 98 morgen, has been proclaimed during the year under review. Proclaimed townships now total 399 morgen. During the year two small areas totalling 7 morgen were transferred for school purposes. The various small portions of the farm sold and transferred now amount to 41 morgen which, together with the areas occupied by proclaimed townships, total 940 morgen, leaving a balance of 977 morgen, most of which is occupied by mine surface development.

(2) The farm Rietfontein No. 8, in extent 4,030 morgen, on which is situated Springs Mines, Limited.—Proclaimed townships, including Pollak Park, which has been proclaimed since the end of the financial year, constitute 945 morgen. During the year a portion of the surface, in extent 2 morgen, was transferred. The total area sold and transferred is now 427 morgen. A further 128 morgen has been sold to the Springs Town Council as reported last year. Including the areas occupied by proclaimed townships a total of 1,580 morgen has thus been disposed of, leaving a balance of 2,530 morgen. Of this balance 74 morgen are reserved for township purposes, and the remainder is largely occupied by mine surface development, quarries, etc.

In the case of the above-mentioned two farms, the Corporation retains the mineral rights and the owner's share of licence moneys over the whole of the farms, including portions which have been sold or over which townships have been established.

(3) The farm Vlakfontein No. 8.—The Corporation owns the surface of a portion measuring 581 morgen which is available for development as township property.

(4) Grootsval Smallholdings.—Lots Nos. 23, 24 and 32 to 37, inclusive.

Townships.—Selcourt Township.—During the year two Commercial Residential stands were sold for £1,400 making a total of 561 stands sold. Twenty stands were repurchased for £3,865, of which 12 were resold for £2,885, leaving a balance of 8 stands repurchased valued at £970. Collections totalled £28,981 and the balance outstanding at the end of the financial year, including interest, was £19,088.

Selection Park Township.—There were no sales of stands during the year. Collections totalled £360 and the balance outstanding at the end of the financial year, including interest, was £7,728.

Breuthurst Township.—All the stands in this township were sold prior to the beginning of the financial year under review. Collections amounted to £101 and the balance outstanding at the end of the financial year, including interest, was £420.

Anzac (Extension No. 1) Township.—There are no further stands to be disposed of in this township. Collections amounted to £330 and the balance outstanding at the end of the financial year, including interest, was £274.

Breuthurst (Extension No. 1) Township.—Proclamation of this township was gazetted on 4th January, 1950, and a total of 147 stands has been disposed of. This figure includes 11 business and trading stands. Six stands were repurchased, leaving a net sale of 141 stands. Collections amounted to £7,648, and the balance outstanding at the end of the financial year, including interest, was £31,754.

Pollak Park Township.—Proclamation of the township, which consists of 74 stands, was gazetted on the 22nd November, 1950, and 46 stands have been sold for £23,140. Collections totalled £8,562 and the balance outstanding at the end of the financial year, including interest, was £15,300.

Mineral Rights.—The farm Zeekoevlei No. 312, district Lydenburg, in extent 2,484 morgen.

SHARES AND INTERESTS IN OTHER CONCERNS.—Your Corporation's principal interests are in the following companies:—American Anglo-Transvaal Investment Corporation, Limited; Anglo American Investment Trust, Limited; Anglo American Prospecting Company, Limited; Amerosea Land and Estates, Limited; Brakpan Mines, Limited; Central Mining Free State Areas, Limited; Daggafontein Mines, Limited; East Daggafontein Mines, Limited; First Electric Corporation of South Africa, Limited; Free State Geduld Mines, Limited; Grootsval Proprietary Mines, Limited; Hard Metals, Limited; Industex Limited; Nchanga Consolidated Copper Mines, Limited; Orange Free State Investment Trust, Limited; Orange Free State Land and Estate Company (Proprietary), Limited; President Brand Gold Mining Company, Limited; President Brand Gold Mining Company, Limited; Rhodesian Alloys, Limited; Rhodesian Anglo American, Limited; South African Mines Selection, Limited; The South African Land and Exploration Company, Limited; Vaal Reefs Exploration and Mining Company, Limited; Vereeniging Brick and Tile Company, Limited; Vlakfontein Gold Mining Company, Limited; Vogelstruisbult Gold Mining Areas, Limited; Welkom Gold Mining Company, Limited; West Rand Investment Trust, Limited; Western Holdings Limited; Western Ultra Deep Levels, Limited.

The market value of the assets comprised under this heading at the 30th September, 1950, taking Stock Exchange quotations where available, and Directors' valuations (but not above cost) in other cases, was £114,515 as compared with the figure of £4,025,182, at which they appear in the Balance Sheet.

FINANCE.—Profit for the year ended 30th September, 1950 ... £625,643

Unappropriated profit brought forward from 1949 ... 204,263

From which the following appropriations have been made: ... £829,906

Provision for taxation ... 60,000

Dividend No. 73 of 40 per cent (2s. per share) ... 450,000

Directors' Special Remuneration ... 2,700

Balance unappropriated 30th September, 1950 ... 512,700

28th November, 1950 ... £317,206

DIVIDEND.—Dividend No. 73 of 40 per cent, equal to 2s. per share, in respect of the Corporation's financial year ended 30th September, 1950, was declared on the 28th November, 1950.

COPIES OF THE FULL REPORT AND ACCOUNTS MAY BE OBTAINED AT THE LONDON OFFICE OF THE CORPORATION, 11, OLD JEWRY, E.C.3

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED GROUP

DIVIDENDS ON STOCK AND SHARES TO BEARER

With reference to the notice of declaration of dividends published in the Press on 22nd December, 1950, the following information is published for the guidance of holders of stock and share warrants to bearer.

The unmentioned dividends will be paid in British currency at par on or after 8th February, 1951, against surrender of the appropriate coupons at Barclays Bank Haussmann, Paris, 8c. Listing Forms may be obtained on application at the offices of either of these paying agents.

Coupons presented for payment at Barclays Bank (Dominion, Colonial & Overseas) will, unless accompanied by Inland Revenue declarations, be paid at the amounts shown in Column No. 12, which are arrived at after deduction of United Kingdom Income Tax (Column No. 11) at rates reduced to allow for relief in respect of Dominion Taxes. Coupons must be left four clear days for examination and may be presented any day (Saturday excepted) between the hours of 11 a.m. and 2 p.m.

Coupons presented for payment at the Banque de l'Union Parisienne, Paris, will be subject to deduction of the appropriate French Taxes from the amounts of the dividends shown in Column No. 7.

NAME OF COMPANY (Each incorporated in the Union of South Africa)	Class of Capital	Divi- dend No.	Cou- pon No.	Amount of dividend declared per £1 Stock or per Share	South African non- resident Share- holders' tax deducted per £1 Stock or per Share	Amount of dividend after deduction of S.A. non- resident Share- holders' tax per £1 Stock or per Share	Rate of relief auth- orised in the £	Gross amount of dividend per £1 Stock or per Share	Rate of deduction of United Kingdom Income Tax in the £	Amount of United Kingdom Income Tax deducted per £1 Stock or per Share	NET amount of dividend per £1 Stock or per Share
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				s. d.	Pence	s. d.	s. d.	s. d.	s. d.	Pence	s. d.
Anglo American Corporation of South Africa, Limited	6% Cum. Pref. Stock	43	43	0 7.2	0.4428	0 6.7572	1 2.76	0 7.2	7 9.24	2.7972	0 3.96
Brakpan Mines, Limited	Shares	76	76	1 1.5	1.0125	1 0.4875	4 6	1 4.1129	4 6	3.6254	0 8.8621
Daggafontein Mines, Limited	Shares	36	36	3 3	2.925	3 0.075	4 6	3 10.548	4 6	10.473	2 1.602
The South African Land and Exploration Company, Limited	Shares	25	25	1 7.5	1.4625	1 6.0375	4 6	1 11.2742	4 6	5.2367	1 0.8008
Springes Mines, Limited	Shares	58	58	0 7.5	0.5825	0 6.9375	1 6	0 7.5	7 6	2.8125	0 4.125

For and on behalf of ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED,
R. V. PRITCHARD, Assistant London Secretary.

The following notes are added at the request of The Commissioners of Inland Revenue:

(i) As regards the dividends payable by Brakpan Mines Limited, Daggafontein Mines Limited and The South African Land and Exploration Company, Limited, the deduction of tax at a reduced rate instead of at the standard rate represents a provisional allowance of relief for the year ending 5th April, 1951. This relief has been authorised by the Commissioners of Inland Revenue in respect of Income Taxes imposed in the Union of South Africa, including the Non-Resident Shareholders' Tax. The final rate of relief allowable to a particular shareholder depends on the shareholder's personal rate of tax and may be more or less than the rates shown in the above table. Revision of the relief involves a corresponding adjustment to the GROSS amount of the dividend for United Kingdom tax purposes.

(ii) As regards the dividends payable by Anglo American Corporation of South Africa Limited and Springs Mines Limited, the relief from United Kingdom income tax for the year ending 5th April, 1951, allowed by deduction of United Kingdom income tax at a reduced rate, has been authorised by the Commissioners of Inland Revenue in respect of South African Non-Resident Shareholders' tax. The final rate of relief allowable to a particular shareholder depends on the shareholder's personal rate of tax and may be less than the rates shown in the above table. Revision of the relief involves a corresponding adjustment of the amount shown above as the GROSS amount of the dividend for United Kingdom tax purposes.

11, Old Jewry, London, E.C.2. 16th January, 1951.

Business Items

Mr. V. J. Chalwin has been appointed managing director of Petters, and has also been elected chairman of Bryce Fuel Injection and a director of Berger Equipment.

Brig. J. B. Hickman and **Mr. J. A. Mason** have been appointed directors of Automatic Telephone & Electric.

Mr. Felix L. Levy has been elected chairman and managing director of The New London Electron Works Ltd. (one of the 600 Group of companies), in succession to his father, the late **Mr. Lawrence Levy**. This appointment took place with effect from December 6, 1950, as did the appointment of **Mr. W. Clark**, general manager of the company since 1943, to the board.

Mr. G. R. McNear has been appointed managing director of the North British Rubber Co., Edinburgh. Mr. McNear has long been associated with the rubber industry in America. **Mr. John K. Coutant** and **Mr. D. H. Gordon** have resigned as managing directors. Mr. Coutant will no longer be connected with the company. Mr. Gordon will remain as director of production, and as a member of the board of directors.

Dr. Charles Sykes has taken up the position of deputy managing director of Thomas Firth & John Brown. Mr. Eric Mensforth will continue as a director.

Mr. G. L. Webster and **Mr. R. S. Davenport** have been appointed to the board of Bowmaker.

WANTED, FIRST-CLASS SURVEYOR to survey and beacon extensive mining and land leases in Egypt. About three or four months' work involved. If Mining Engineer possibility retention two year contract. Write giving full details experience, qualifications, stating salary required, age, to Box M.J.497, at 191, Gresham House, E.C.2.

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MILL SHIFTSMEN required by **COLONIAL DEVELOPMENT CORPORATION** for a base metal property in **EAST AFRICA**. Applicants must have good general milling experience and be fully qualified to take charge of a shift in plant making a differential separation by flotation. £800.—£1,000 p.a., including overseas allowances and according to age and experience. Permanent pensionable post; outfit allowances; paid generous leave; accommodation provided at nominal rent. Please apply in writing, to Personnel, 19, Curzon Street, London, W.1, quoting Serial No. 42, by February 25, 1951.

THE CENTRAL MINING—RAND MINES GROUP DIVIDENDS ON SHARES TO BEARER

The following dividends will be paid on or after 8th February, 1951, after surrender of the appropriate coupons at the London Office of the Companies, 4, London Wall Buildings, E.C.2, or, with the exception of the Company marked with an asterisk, at the Crédit Lyonnais, Paris.

The dividends will be payable in British currency, at par, at the rates declared in South African currency (Column No. 4), less South African non-resident shareholders' tax (Column No. 5).

COUPONS presented for payment at the London Office will, unless accompanied by Inland Revenue declarations, be paid at the rates shown in Column No. 12, which are arrived at after deduction of United Kingdom income tax (Column No. 11), at rates reduced to allow of relief in respect of Dominion taxes.

COUPONS presented at the Crédit Lyonnais, Paris, will be subject to the deduction of French income tax from the amounts of the dividends shown in Column No. 6.

NAME OF COMPANY (Each incorporated in the Union of South Africa.)	Divi- dend No.	Con- solidated No.	Amount of dividend declared per share.	Deduction in respect of South African non-resident shareholders' tax, per share.	Amount of dividend after such deduction, per share.	Provisional rate of relief authorised in the £.	Gross amount of dividend, per share.	Rate of Dominion taxation applicable in the £.	Rate of deduction of United Kingdom income tax in the £.	Amount of United Kingdom income tax deducted, per share.	Net amount of dividend per share.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
City Deep, Ltd.	62	62	3 6	3 15	3 2 85	4 6	4 2 13	—	4 6	11 28	2 3 57
Consolidated M. Reef M. & F., Ltd.	32	79	4 0	3 60	3 8 40	1 9	4 0 66	1 9	7 3	1 5 64	2 2 76
Crown Mines, Ltd.	39	99	6 6	5 85	6 0 15	4 6	7 9 10	15 8	4 6	1 8 95	4 3 20
Durban Roodport Deep, Ltd.	60	60	3 0	2 70	2 9 30	4 3	3 6 29	—	4 9	10 04	1 11 26
East Rand Prop. Mines, Ltd.	62	63	2 6	2 25	2 3 75	4 6	2 11 81	19 6	4 6	8 06	1 7 69
Goldenhuis Deep, Ltd.	79	79	1 6	1 35	1 4 65	4 6	1 9 48	—	4 6	4 83	1 11 82
Modderfontein East, Ltd.	47	28	4 0	3 60	3 8 40	4 6	4 9 29	8 6	4 6	1 0 89	2 7 51
Rand Mines, Ltd.	95	95	3 6	2 4885	3 3 5115	4 6	4 2 9826	15 0	4 6	11 4711	2 4 0404
Rose Deep, Ltd.	91	91	3 6	3 15	3 2 85	1 6	3 6 00	11 6	7 6	1 3 75	1 11 10
Transvaal Con. Land & Ex. Co. Ltd.	28	28	1 9	1 575	1 1 425	4 6	2 1 065	6 4	4 6	5 840	1 1 785
Transvaal Gold M. Ests. Ltd.	80	80	1 0	0 30	11 10	4 6	1 2 32	—	4 6	3 22	7 88

*These rates also apply to the dividends paid by the 4 companies concerned on 10th August, 1950.

Coupons required to be paid at the London Office must be left at least four days clear for examination and may be presented any day (Saturdays excepted) between the hours of 11 and 2. Depositors will be notified at the time of deposit when the cheques will be ready.

Listing forms may be had on application.

Where no figure is shown in Column No. 9, the rates of Dominion taxation applicable in the £ cannot yet be ascertained, as they are dependent on the final particulars of the South African taxation of the companies concerned, which are not yet available.

A. MOIR & CO.,

London Secretaries of the above-named Companies.

Notes:—(A) The Companies have been asked by the Commissioners of Inland Revenue to state:—

The deduction of tax at the reduced rates in the £ (Column No. 10) instead of at the Standard Rate of 9s. 0d. in the £ represents a *provisional* allowance of relief at the rates shown in Column No. 7. This relief has been authorised by the Commissioners of Inland Revenue in respect of Income Taxes imposed in the Union of South Africa including the non-resident shareholders' tax. The final rate of relief allowable to a particular shareholder depends on the shareholder's personal rate of tax, and may be more or less than the rates shown in Column No. 7. Revision of the relief involves corresponding adjustments of the gross amounts of the dividends for United Kingdom tax purposes (Column No. 8).

(B) Rand Mines Limited has also been asked by the Commissioners of Inland Revenue to state that the "appropriate fraction" for the purpose of Section 31 of the Finance Act, 1946 (which provides for relief on that part of the dividend deemed to be payable out of the Company's profits which have suffered United Kingdom Income Tax) applicable to this dividend and also to dividend No. 94 is $\frac{1}{4}$. Any claims to relief under this Section should be submitted to the Inspector of Taxes to whom the shareholder makes returns of income.

THE GROSS AMOUNT OF THE DIVIDEND TO BE INCLUDED IN ANY STATEMENT OF TOTAL INCOME FOR UNITED KINGDOM TAX PURPOSES IS SHOWN IN COLUMN NO. 8.

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15th January, 1951.

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